RS-8505-00

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CABOT CORPORATION, CAB-O-SIL DIVISION

SURFACE IMPOUNDMENT

CLOSURE PLAN

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I-1 Closure Plan: 270.14(b)(13), 264.112

See I-1e(1)-Ig for surface impoundment closure plan details.

I-1a Closure Performance Standard: 264.111

When evaluating closure schemes for Cabot's surface impoundment, two general possibilities exist. The hazardous waste residue, treated or untreated can be removed and transported to a "safe landfill", or it can be neutralized, solidifed, and left in place with proper cover to prevent migration of remaining materials into the groundwater. Given the Cabot plant's location, the second alternative is the more prudent.

The Cabot facility is located in an area made up of unconsolidated glacial sediments laid down directly by ice sheets(till) or deposited in front of the ice by melt-water streams (outwash) or glacial lakes. Till is the most common deposit, consisting primarily of clay and silt with thin, discontinuous sand lenses. Boring logs in the Tuscola area indicate only a few isolated, lenticular, silty sand lenses occur in the till, generally at depts greater than 70 feet. However, no wide-spread, prolific aquifers are reported. During the sampling of groundwater monitoring wells,

we have noticed the unusually long recharge time necessary after well volumes have been removed prior to sampling. This recharge time ranges from a few hours to several days.

Given the low permeability of clay-silt deposits which make up the area below and surrounding the surface impoundment, treatment, solidification and proper capping of the impoundment are by far the preferable closure method.

The surface impoundment will be closed according to the attached Closure Plan. The plan calls for the neutralization, solidification and stabilization of the contaminated solids and part of the impoundment floor, followed by adequate capping to prevent run-on and infiltration.

I-1b Partial and Final Closure Activities: 264.112(a)(1)

We do not plan to partially close our surface impoundment, therefore this section does not apply.

I-1c Maximum Waste Inventory: 264.112(a)(2)

The maximum waste we could have stored in the surface impoundment was 1.6 million gallons.

I-1d Inventory Removal Disposal or Decontamination of Equipment: 264.112(a)(3), 264.114

See I-1e(1)-I-1g surface impoundment closure plan details.

I-1d(1) Closure of Containers: 264.178

This section does not apply because we do not store hazardous wastes in containers for over 90 days.

I-1d(2) Closure of Tanks: 264.197

This facility does not store hazardous wastes in storage tanks for over 90 days, therefore this section does not apply.

I-1d(3) Closure of Waste Piles 270.18(i), 264.258

Hazardous wastes are not stored in waste piles at this facility, therefore this section does not apply.

I-1d(4) Closure of Surface Impoundments:

All hazardous waste residues, contaminated containment system components, and contaminated subsoils, will be neutralized, solidified, and stabilized. Contaminated equipment will be washed to remove acidic residues. The acidic washings will be disposed of in the undeground injection facility.

The surface impoundment does not contain the proper liner. The requirements of I-1e and a post closure plan are being addressed in the appropriate sections.

I-1d(6)(a) Continuance of Treatment: 264.280(a)(1)-(7)

During the surface impoundment closure period, neutralization and stabilization of the hazardous wastes will be contained within the existing surface impoundment dikes. This will prevent run-off of hazardous constituents. In addition the hazardous wastes will be wet minimizing wind dispersal during mixing.

I-1d(6)(b) Vegetative Cover: 270.20(d)(6), 264.280(a)(8)

The vegetative cover will consist of a mixture of bluegrass. rye, and fescue grasses. The grasses are common to this area and will thrive with minimum maintenance. The grass will be watered, fertilized and mowed as needed to minimize cover erosion.

I-1e Closure of Disposal Units: 270.14(b)(13), 270.17(g), 270.18(i), 270.21(e), 264.228(a)(2), 264.228(c)(1)(i), 264.258(c), 264.310(a)

See I-1e(1)(a) to I-1f

I-1e(1) Disposal Impoundment: 264.228(a)(2)

See I-1e(1)(a) to I-1e(b)

I-1e(1)(a) Elimination of Liquids: 264.228(a)(2)(1)

All free liquids remaining in the surface impoundmant will be pumped down our underground injection facility using the existing well injection pumps.

I-1e(1)(b) Waste Stabilization: 264.228(a)(ii)

The sludge (mostly silica) remaining in the surface impoundment will be neutralized and stabilized using ground limestone. The approximate ratio will be two pounds of sludge per pound of limestone. Mixing will be accomplished using earth moving equipment. Upon mixing with the limestone, the PH will be raized above 2. The limestone-silica mixture that is formed is very stable and can be compacted to prevent any future settling. Proper compaction will be determined by the engineer in charge of closure using appropriate tests.

I-1e(2) Cover Design: 264.228(a)(2)(iii), 264.310(a)

Since the stabilized sludge remaining in the surface impoundment is no longer hazardous, the cover design recommended by the EPA is not necessary. We propose a four foot deep cover composed of tow feet of clay compacted in six inch lifts, six inches of sand/gravel and eighteen inches of top soil. See Appendix Items B & C for details and dimensions.

The cover crop will consist of a mixture of blue grass, fescue and rye grasses. These grasses have a shallow root system and thrive in this area.

The clay will be the same composition as used to line our surface impoundment. This will minimize the chance of the "bath tub effect".

I-1e(3) Minimization of Liquid Migration: 264.228(a)(2)(iii), 264.310(a)

Since the stabilized sludge in the surface impoundment will no longer be hazardous, the engineering calculations are unnecessary.

I-1e(4) Maintenance Needs: 264.228(a)(2)(iii), 264.310(a)

Experience with these species of grass has shown that minimum maintenance is required to maintain an effective cover. Mowing, fertilizing and watering will be performed by our maintenance department when needed.

I-1e(5) Drainage and Erosion: 264.228(a)(2)(iii), 264.310(a)

The slopes of the closed surface impoundment will include the existing surface impoundment dike as well as the cover layer described in I-1e(2). See Appendix Item A for details of the proposed slopes. Erosion should not be a problem for the closed surface impoundments because the rock cover on the dikes have proven effective against erosion. The slope of the cover layer will be under five per cent.

I-1e(6) Settlement and Subsidence: 264.228(a)(2)(iii), 264.310(a)

The stabilized sludge and cover layers will be compacted so that settlement will not be a problem.

I-1e(7) Cover Permeability: 264.228(a)(2)(iii), 264.310(a)

Since the clay used in the cover layer will be from the same source used to line the SI, the permeability will be the same.

I-1e(8) Freeze Thaw Effects: 264.338(a)(2)(iii), 264.310(a)

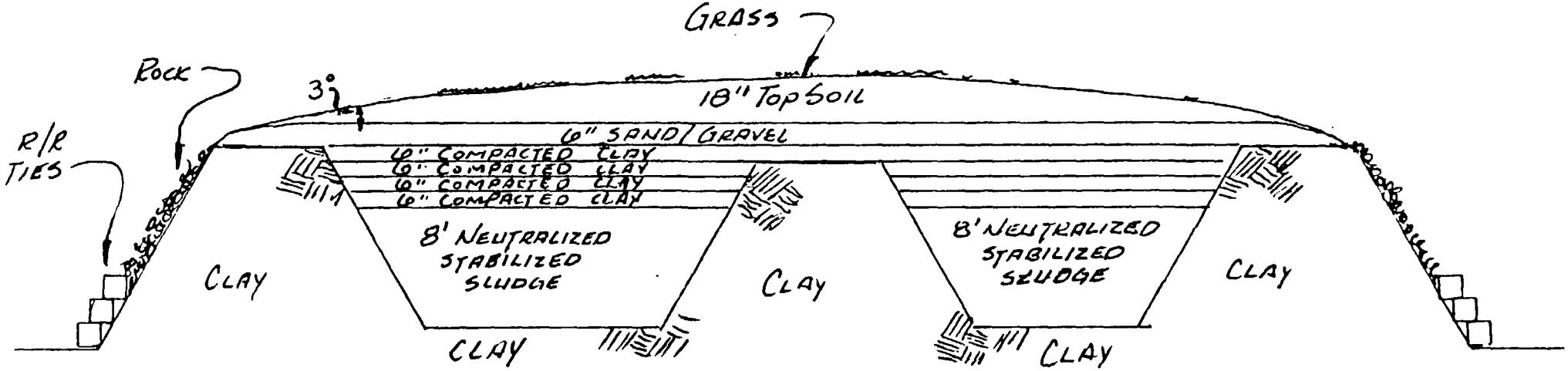
The cover layer depth is four feet and the frost line in this area is three and one half feet. Therefore, thed impermeable layer is below the depth of frost penetration.

I-1f Schedule for Closure: 264.112(a)(4)

The surface impound should be closed in 1986. The expected schedule is as follows:

April 1986	Begin removal of free liquids.
June 1986	Begin sludge stabilization process.
July 1986	Construct final cover.
August 1986	Complete closure.

ITEM A



I-1e(2)

DWG. BY J. GRIBLER
NO SCALE

ITEM B